

Abdominal Tuberculosis: Laparoscopy A Novel Tool for Diagnosis

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Abstract

Objective: To analyze the efficacy of diagnostic laparoscopy for diagnosing abdominal tuberculosis in susceptible cases. **Methods:** The records of 20 patients (15 males, 5 females, mean age 35, range 20-70 years) diagnosed with abdominal TB by diagnostic laparoscopy in Dr. D.Y. Patil hospital between June 2017-June 2018, were analyzed. **Results:** Chronic abdominal pain was the most common presenting complaint (85% of the patients) followed by history of weight loss and loss of appetite (65% patients). Other common findings were evening rise of fever (50%), altered bowel habits (30%), ascites (35%), abdominal distension (25%). Radiological findings were suggestive of lymphadenopathy (60%), circumferential wall thickening (25%) and (10%) strictures or adhesions. Patients were posted for diagnostic laparoscopy after thorough investigations and high suspicions of abdominal tuberculosis. Biopsies were taken in all cases and 40% patients required adhesiolysis whereas 10% patients required stricturoplasty. All biopsied specimens were sent for HPE, culture and sensitivity, geneXpert and TBPCR and it helped in the confirmation of abdominal tuberculosis. **Conclusion:** Diagnostic laparoscopy as a tool for early diagnosis and hence early medical management of abdominal tuberculosis has been a recent and novel advancement in the field of surgery.

It has also led to the prevention of mortality and morbidity caused by abdominal tuberculosis by eliminating emergency exploratory laparotomies and delayed diagnosis.

Keywords: abdominal tuberculosis; diagnostic laparoscopy.

Background

The diagnosis of abdominal tuberculosis is a global struggle for even the most benevolent practitioners. It is the most common site of extra pulmonary tuberculosis and is known for its vague presentations.

The advent of diagnostic laparoscopy has been a boon for early diagnosis and medical management of abdominal tuberculosis. Diagnostic laparoscopy has replaced the need for exploratory laparotomy and has thereby drastically reduced morbidity and mortality associated with abdominal tuberculosis and surgery.

In our study conducted at Dr. D.Y. Patil Hospital, Pimpri Pune between June 2017 to June 2018, we have collected data of 20 patients from the record section who were diagnosed to have abdominal tuberculosis on diagnostic laparoscopy and have thereby highlighted the importance of diagnostic laparoscopy as a novel tool for early diagnosis and management of abdominal TB.

Introduction

Tuberculosis (TB) is a common disease world wide, affecting one third of the whole population

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especially in developing countries [1]. Rate of the cases vary depending on numerous factors such as age, sex, race, socioeconomic status and geographic location, which are important in the prevalence of the disease.

Gastrointestinal TB remains one of the commonest and most difficult disease globally as far as diagnosis is concerned [2-6]. It has been reported that upto 5% of TB patients may have abdominal tuberculosis and of these, 25-60% may have peritoneal involvement [7]. Active pulmonary TB in association with abdominal TB has been reported to range from 20-50% [8].

Presentation of abdominal TB mimics other abdominal pathologies and hence leads to undue delay in diagnosis and treatment and further increases overall morbidity [9-11]. A large number of cases were diagnosed on exploratory laparotomy due to unavailability of less invasive procedures and delayed or acute presentations. Advent of laparotomy as a diagnostic and therapeutic tool has lead to it becoming the investigation of choice in cases suspected to be abdominal TB.

This retrospective study aims at finding the possible role of diagnostic laparoscopy in patients with high degree of suspicion for diagnosing and resorting to early anti-tubercular treatment as well as avoiding laparotomies as a surgical intervention in cases of abdominal tuberculosis.

Materials and Methods

Patients diagnosed as abdominal tuberculosis on laparoscopy during the period of June 2017 - June 2018 in General Surgery Ward, at Dr. D.Y. Patil Hospital and Research Centre, Pune were enrolled in this study. Data was acquired from the record section based on age group, gender, presenting symptoms and signs along with haematological, radiological, intra-operative and histopathological findings.

Results

A total of 20 patients were diagnosed as abdominal tuberculosis in the study. Age group ranged widely from 18 years to 70 years old (mean age : 39.8 years) [Table 1], with a female to male ratio of 1:3. [Table 2].

All patients presented with more than one symptom of which commonest being pain in abdomen (85%), loss of weight and appetite (65%), evening rise of fever (50%), altered bowel habits

(30%) and acute pain on abdomen (15%) [Table 3]. On clinical examination, most frequently found sign was ascites (35%), followed by abdominal distension (25%), doughy abdomen (20%), tenderness and guarding/rigidity (15%) and visible peristalsis (10%) [Table 4].

Table 1: Distribution According to Age

Age in Years	No. of Cases	Percent
Below 20	2	10
21-30	6	30
31-40	5	25
41-50	2	10
51-60	2	10
Above 60	3	15
Total	20	100

Table 2: Distribution According to Sex

Sex	No. of Cases	Percent
Male	15	75
Female	5	25
Total	20	100

Table 3: Distribution According to Symptoms

Symptom	No. of Cases	Percent
Pain in abdomen (acute)	3	15
Pain in abdomen (chronic)	17	85
Evening rise of fever	10	50
Loss of weight	13	65
Loss of appetite	13	65
Altered bowel habits	6	30

Table 4: Distribution According to Signs

Signs	No. of Cases	Percent
Abdominal distension	5	25
Tenderness	3	15
Ascites	7	35
Doughy abdomen	4	20
Visible peristalsis	2	10
Guarding / rigidity	3	15

Out of the 20 cases, 12 had chronic presentation, 5 sub-acute and 3 acute cases [table no. 5]. There were two laboratory parameters considered, total leukocyte count (TLC) and erythrocyte sedimentation rate (ESR). Most patients presented with an elevated TLC (leukocytosis) while elevated ESR was seen in 55% of the cases [Table 6].

Table 5: Type of Presentation

Presentation	No. of Cases	Percent
Acute	3	15
Sub-acute	5	25
Chronic	12	60

Table 6: Distribution According to Haematological Values

TLC			ESR		
Category	No. of cases	%	Category	No. of cases	%
Below 4000	3	15	<15 mm/hr	11	55
Above10000	17	85	>15 mm/hr	9	45
Total	20	100	Total	20	100

Radiological findings most commonly revealed ascites (95%), followed by lymphadenopathy (60%), circumferential wall thickening of involved segment of bowel (25%), strictures (20%), to and fro peristalsis suggestive of adhesive obstruction (20%) and in one case, an ileo-caecal mass [Table 7].

Table 7: According to Radiological Findings

USG	No. of Cases	%	CECT	No. of Cases	%
Ascites	19	95	Ascites	19	95
Mesenteric lymph nodes	9	45	Lymph nodes	12	60
To and fro peristalsis	4	20	Wall thickening	5	25
Ileo-caecal mass	1	5	Strictures	4	20

Most commonly affected abdominal organ was the peritoneum (40%), followed by mesentery and its lymph nodes (35%), ileo-caecal junction (15%) and isolated ileal lesion in 10% cases. [Table 8].

Table 9 shows the commonly required intra-operative procedures in cases of abdominal tuberculosis diagnosed on laparoscopy.

Table 8: Intraoperative Findings

Site and Type	No. of Cases	Percent
Ileocaecal	3	15
Ileal	2	10
Peritoneal	8	40
Mesentery and lymph nodes	7	35

Table 9: Procedures Performed

Procedure Performed	No. of Cases	Percent
Adhesiolysis	8	40
Strictureplasty	2	10
Biopsy	20	100

The biopsied tissue along with peritoneal fluid was sent for culture and sensitivity, histopathological examination (HPE), TBPCR and for GENEXpert which revealed maximum sensitivity by GENEXpert followed by HPE and TBPCR and least by culture and sensitivity [Table 10].

Table 10: Distributions According to Diagnostic Test and Result

TEST	C/S	HPE	TBPCR	GENEXpert
No. of cases	7	11	11	13
Percent	35	55	55	65

Discussion

Abdominal TB remains a major health issue globally and a challenge to diagnose. It ranks as the second leading cause of death due to infectious diseases worldwide after HIV [12].

In this study, there were 20 patients diagnosed with abdominal tuberculosis. There were 15 males and 5 females with a male to female ratio of 3:1 and the age range being 18-70 with mean age being 39.8 years. In a study conducted by Uzunkoy et al., [13] the male to female ratio was 4:7 with a mean age of 39 years (age range 18-65). In another study by Faizollah et al., [14] majority of the patients diagnosed laparoscopically to have abdominal kochs were females i.e 18 of 28 patients and a male to female ratio of 5:9, both of which are contrary to our study. The small sample size in this study might be considered as a limitation to get proper epidemiological data.

Abdominal Koch's cases present with vague symptoms and signs. In a study by Kiran et al. pain was the most common presenting symptom (82.5% cases) which is in accord with our study showing 15% cases of acute abdominal pain and 85% cases with chronic abdominal pain. In similar studies by Bhansali et al. [15] and Govinda et al., pain was the most common symptom observed in 100% and 89.5% cases respectively. Another study by Muneef et al. [16] however, shows fever as the most common presenting symptom i.e. 73%

Ascites (35%) is the most common sign observed in our study followed by abdominal distension (25%). In a study by Sheer T A et al. [17], ascites was seen in 96% cases and abdominal distension in 95% cases. Similar findings were observed in a study by Faizollah et al. [14] with 70% cases with ascites and 78% cases with abdominal distension.

The cornerstone of TB diagnosis is the culture of involved microorganism, molecular diagnostic methods such as PCR and recently emerged GENEXpert [18]. Histopathological examination is an appropriate method for diagnosing TB and ruling out malignancy or any other cause. Laparoscopy provides minimally invasive access to obtain sample for HPE.

Tuberculosis can involve any part of the gastrointestinal tract and is the sixth most common

site for extra pulmonary TB. It has been known to be caused due to reactivation of silent foci which spreads by the haematogenous route. However, it should be noted that abdominal tuberculosis could be found as primary infection with no pulmonary tuberculosis [19].

Intestinal TB usually has three gross pathological forms: Hypertrophied, Ulcerative or Strictureous. Ileocaecal TB is always a hypertrophied lesion and presents with acute intestinal obstruction [20].

Rathi et al. claim that the commonest area affected is the ileocaecal region [21]. In this study, it has been found that peritoneum; mesenteric, ileo-caecal and ileum are the most commonly affected sites. Peritoneum and ileo-caecal are commonly infected sites and manifest as granulomas, caseation and fibrosis due to various contributing factors such as stasis, abundant lymphoid tissue, increased rate of absorption at this site and closer contact of bacilli with ileum mucosa.

Peritoneal TB presents with varied symptoms determined by wet and dry clinical phases. The wet phase corresponds to early phase and symptoms associated with it are usually abdominal distension secondary to intra abdominal ascites, abdominal pain and weight loss [22]. The dry phase is characterized usually by adhesions and follows the wet phase. In our study almost 40% patients showed adhesions intraoperatively which signifies a delay in admission.

In earlier times, laparotomy was the common surgical intervention required for diagnosing and treating abdominal tuberculosis. Recent times and with high degree of suspicion, laparoscopy is opted for as a minimally invasive surgical intervention [23].

In our study, all patients underwent diagnostic laparoscopy after thorough history, examination and investigations were suggestive of abdominal TB. Biopsy along with intraoperative picture proved the diagnosis in all cases. Only 50% cases required intraoperative procedures such as adhesiolysis and stricturoplasty. There were no complications in any of the laparoscopies and all patients were started on anti-tubercular therapy.

Conclusion

Diagnosis of abdominal tuberculosis is always a dilemma and presents as a challenge due to its non-specific clinical presentations.

Laparoscopy is safe, reliable, minimally invasive and effective in cases presenting as a diagnostic dilemma. CT, TB PCR, GENE XPERT and culture of

ascitic fluid are the most useful tools of diagnosis. Diagnostic laparoscopy with tissue biopsy and Histopathological examination provided rapid and correct diagnosis of abdominal tuberculosis. Prompt diagnosis allows us to start early anti tubercular therapy and hence reduces morbidity and mortality due to this disease.

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